

REMARKS

Claims 1-6 are all the claims pending in the application, stand rejected. Claim 1 is amended.

Claims Rejections - 35 U.S.C. § 103

Claims 1, 2 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zerbe (EP 0934851 A2) in view of Suzuki (5,034,772). This rejection is traversed for at least the following reasons.

As previously explained, the present invention, as defined in independent claim 1 and with reference to the non-limiting and exemplary embodiment that is illustrated in Fig. 1 and described at page 3 of the specification, is a sensor or camera in a window (1) that comprises a hood (10) and a sensor main body (4) that includes a lens (3) projecting within the hood (10). A part of the hood (10) is a breathable dust proof filter (11). Notably, only the lens (3) is within the hood (10), while the body (4) of the sensor or camera is outside of the hood. The hood (1) protects the lens (3) from contamination by dust or smoke particles, and the filter (11) permits the volume within the hood to be exposed to ambient conditions such that a change in temperature does not result in a condensation of moisture on the lens, while excluding dust or other particles, as explained at page 2 of the present application.

Zerbe

With reference to Fig. 1 of the European publication, the Examiner asserts that Zerbe discloses a sensor (6) that is mounted within a hood (3) where the sensor has a main body (7) and utilizes a lens (9) that would permit an object to be detected. The Examiner asserts that the lens projects within the hood, based upon the text in col. 3, lines 53-58 of the reference. The Examiner further notes that various objects are recorded so that operation of the automobile may be optimized, as disclosed at col. 3, lines 37-43 of Zerbe. The Examiner acknowledges that no recording of the detected objects is taught but asserts that some form of detection of what is recorded would be performed.

At page 3-6 of the Office Action, the Examiner repeats both the German text as well as the English text in support of this contention. Specifically, in the text at col. 3, lines 28-36, the module is described as a "luminance-sensor-module" having an inside lamp 5 and an "optical direction sensor" 6, as well as other elements such as a loudspeaker, microphone, etc. It is clear that all of these elements are housed within the housing 3.

As explained at col. 3, lines 37-45, the optical direction sensor serves to make a record of picture information of the surrounding area of the automobile. This includes both near-field and far-region images which are important for the optimization of the automobile operational mode. The text expressly states that "the direction sensor 6 is arranged so that it is sheltered behind the windshield 1 in the inside room of the automobile so that the environmental impact can be known.

With reference to col. 3, lines 53-58, the optics 8 are taught to have layers 9 of material with variable light permeability. As is clear from the illustration in Fig. 1, these features are "integrated with and confined in the windshield 1 around the direction sensor 6." The optics 8 are not within the volume defined by the hood (3).

There are two significant differences between the present invention and Zerbe.

No Lens Within The Hood

Applicants respectfully submits that the structure in Zerbe also does not include a lens disposed within the hood, as claimed. The lens 8 is within the windshield. This is a significant structural difference. Applicants have amended claim 1 to more clearly express this feature.

Given this arrangement of the lens within the windshield of Zerbe, and the proximity of the lens to the housing 7 of the direction sensor 6 with the housing sealed up at the windshield 1, the problem confronted by the present invention does not exist in Zerbe. Specifically, the sensor optics 8 do not experience the negative influence of the inner area of the automobile (dust, moisture, etc.), as explained at col. 3, lines 45-50 (reproduced at page 5 of the Office Action).

Indeed, the integration of the lens into the windshield ensures that the only blockage of images from the sensor 6 is dust or debris that is on the outside of the windshield. Clearly, this may be easily cleaned by the user or by the windshield wiper. However, to achieve this benefit, an expensive and complicated windshield arrangement must be provided, as shown in Fig. 1 of Zerbe.

By contrast, the present invention is adapted to be mounted to a conventional windshield. The downside to this arrangement is that the lens may be exposed to dust that enters the hood. One solution is to provide a complete seal to keep out the dust and debris. However, the use of a seal creates problems with condensation, as explained at page 2 of the present application. Accordingly, Applicants have fashioned the hood with a filter that solves this difficult problem.

In the absence of the problem with dust and moisture on the windshield-embedded lens of Zerbe, there would be no need for any filter.

No Filter

The Examiner admits that Zerbe does not teach or suggest the use of a filter, for the reasons already noted. However, the Examiner looks to Suzuki, which discloses a breathable dustproof filter as part of the sensor arrangement, based on the disclosure at col. 3, lines 42-47, and asserts that it would be obvious to apply such filter in Suzuki to the structure of Zerbe. The Examiner's rationale for the proposed combination is in error.

The Examiner asserts that Zerbe is analogous art because Zerbe and the present application are from the same field of endeavor. This assertion is flawed in that the sensor in Zerbe and the sensor in the present invention have structural differences such that the present invention solves a problem with dust and moisture on a lens, while Zerbe does not even face that problem, as already explained.

The Examiner also asserts that Zerbe and Suzuki are combinable because they are from similar problem-solving areas, namely the protection of electronic sensors. This assertion also is erroneous since Zerbe provides security against dust by sealing the optics in a windshield and sealing the sensor against the windshield surface and vehicle body, while Suzuki has no ability to

provide such seal in a photocopying or printer environment. Moreover, the sizes of the two optics systems are totally different and do not confront the same problem with dust. In short, there is no need to modify Zerbe to add a filter.

The Examiner asserts that at the time of the invention it would have been obvious to a person skilled in the art to provide a breathable dustproof filter as part of the sensor arrangement, as taught by Suzuki. The Examiner asserts that the sensor of Zerbe projects within the hood and the sensor electronics are contained within the hood, thus motivating the provision of a breathable dustproof filter on part of the hood. The motivation being to keep the sensor clean.

Again, as the Examiner notes, while dust and other environmental problems are of concern to Zerbe, the use of an airproof and dustproof seal is chosen to solve the problem of keeping the sensor clean. The lens is sealed in the windshield and need not be otherwise protected. Zerbe clearly rejects the idea of using a filter to clean the air. Again, this is not surprising since the optical signals transmitted through the windshield via the embedded lens 8 would reach the sensor 6 without any blockage.

Claim 2

The Examiner notes that Suzuki discloses that the breathable dustproof filter is used to cover the sensors which are mounted on a printed circuit board in Fig. 4A as disclosed at col. 3, lines 44-47. The Examiner asserts that the construction of the filter, specifically the fact that the filter is designed to cover the sensors while only the sensors themselves are mounted on the printed circuit board, demonstrates that the filter is detachably installed. Further, the Examiner asserts that is inherent that the filter would be detachably installed since it otherwise could not be replaced or washed.

With regard to this claim, Applicants rely upon the patentability of parent claim 1.

Claim 5

The Examiner asserts that it is implicit in the disclosure of Zerbe that the visual field of the lens coincides with the wiping range of the wiper provided on the front surface of car

window. The Examiner asserts that the wiper is a standard piece of equipment and that the sensor optics 8 in Fig. 1 of Zerbe are placed above the region of the windshield but close to the rearview mirror, at the upper area of the wiping range of a wiper.

Again, the Examiner's argument in this regard may be difficult to overcome in view of the embedding of the lens into the windshield since it would be more logical to have the windshield wiper clean the area over the lens than to have the area left uncleaned.

This claim is patentable for the reasons given for parent claim 1.

Claim 6

The Examiner asserts that Zerbe discloses that the sensor main body is a camera main body (col. 3, lines 45-50) and that the sensor main body (7) is arranged such that the entire sensor is sealed up against the environmental effect of the automobile such as dust, at col. 3, lines 45-50. The inside elements are sensor optics (8) thereby requiring the sensor main body to be a camera main body. The Examiner asserts that the sensor main body includes the optics and all the other bits that go along with the sensor optics for recording the image information around the automobile.

This analysis is flawed in that the optics are clearly separate from the sensor body and are sealed within the windshield, while the sensor is sealed within the body 3. These are separate and distinct structures. Whether or not the sensor is a camera in Zerbe, the features of parent claim 1 are not found in the combination of references.

Claims 3 and 4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zerbe (EP 0934851 A2) in view of Suzuki (5,034,772) and Fujii (5,922,105). This rejection is traversed for at least the following reasons.

Claim 3

The Examiner asserts that Zerbe in view of Suzuki does not disclose expressly that the breathable dustproof filter is a HEPA filter. The Examiner looks to Fujii for the disclosure of a HEPA filter, at col. 3, lines 24-26. The Examiner asserts that these three references are

combinable because they solve a similar problem and the motivation to add a HEPA filter is both convenience and effective filtering, as explained at col. 3, lines 24-26 of Fujii.

This rejection would be overcome on the basis of the patentability of the parent claim.

Claim 4

A similar basis for patentability exists with regard to the claimed ULPA filter.

Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Zerbe (EP 0934851 A2) in view of Suzuki (5,034,772) and obvious engineering design choice.

With regard to claim 5, the Examiner asserts that it is implicit in the disclosure of Zerbe that the visual field of the lens coincide with the wiping range of the wiper provided on the front surface of the car window. The Examiner observes that a wiper is a standard piece of equipment for an automobile and that the sensor optics, as illustrated in Fig. 1 of Zerbe, are above the region of the windshield but close to the region of the windshield near the rearview mirror. This is generally the upper area of the wiping range of the wiper.

The Examiner further argues that even if it were not implicit in the disclosure of Zerbe that the visual field of the lens coincides with the wiping range of the wiper provided on the front surface of the car window, it would have been an obvious engineering choice.

Again, patentability of this claim is based on the dependence from claim 1.

New Claims

In order to emphasize the feature of protecting the lens from dust in the present invention, Applicants have added a claim that specifies that the body of the sensor is outside of the hood. Zerbe clearly is distinguishable from this feature of the present invention. Further, there would be no motivation to combine Zerbe with Suzuki since there is no teaching in either reference that the body of the sensor should be outside of the hood.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

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Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

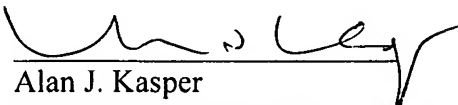
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